CLAIMS:

1. A substantially lead-free solder comprising:
from 88.5% to 93.2% tin;
from 3.5% to 4.5% silver;
from 2.0% to 6% indium; and
from 0.3% to 1% copper.

2. A solder according to Claim 1 which comprises up to 0.5% of an anti-oxidant or anti-skinning additive.

3. A solder according to Claim 2 wherein the additive is phosphorous or another non-metallic compound or element.

4. A solder according to Claim 1 which comprises 91.3% tin, 4.2% silver, 4.0% indium and 0.5% copper.

5. A solder according to Claim 1 which comprises 91.39% tin, 4.1% silver, 4.0% indium, 0.5% copper and 0.01% phosphorous.

6. A method of preparing a substantially lead-free solder, comprising the step of mixing tin, silver, indium and copper such that:
the proportion of tin in the solder is from 88.5% to 93.2%;
the proportion of silver in the solder is from 3.5% to 4.5%;
the proportion of indium in the solder is from 2.0% to 6%; and
the proportion of copper in the solder is from 0.3% to 1.0%.

7. A method according to Claim 6 comprising including up to 0.5% of an anti-oxidant or anti-skinning additive in the solder mixture.

8. A method according to Claim 7 wherein the additive is phosphorous or another non-metallic compound or element.

9. A method according to Claim 6 which comprises mixing tin, silver, indium, and copper such that:

the proportion of tin in the solder is 91.3%;

the proportion of silver in the solder is 4.2%;

the proportion of indium in the solder is 4%; and

the proportion of copper in the solder is 0.5%.

10. A method according to Claim 6 which comprises mixing tin, silver, indium, copper and phosphorous such that:

the proportion of tin in the solder is 91.39%;

the proportion of silver in the solder is 4.1%;

the proportion of indium in the solder is 4%;

the proportion of copper in the solder is 0.5%; and

the proportion of phosphorous in the solder is 0.01%.

11. A method of soldering, comprising the step of using a substantially lead-free solder comprising:

from 88.5% to 93.5% tin;

from 3.5% to 4.5% silver;

from 2.0% to 6.0% indium; and

from 0.3% to 1.0% copper.

12. A method according to Claim 11 which comprises using a solder having up to 0.5% of an anti-oxidant or anti-skinning additive.

13. A method according to Claim 12, wherein the additive is phosphorous or another non-metallic element or compound.

14. A method according to Claim 11 which comprises using a solder comprising 91.3% tin, 4.2% silver, 4.0% indium and 0.5% copper.

15. A method according to Claim 11 which comprises using a solder comprising 91.39% tin, 4.1% silver, 4.0% indium, 0.5% copper and 0.01% phosphorous.

16. A method according to Claim 11 which comprises the step of wave-soldering using the substantially lead-free solder.